2.3 Results

Table D.1 displays the DCF-computed ROEs for each of the RBHCs for 1991, 1992 and 1993.

3. Cost Of Debt

Data on each year's cost of embedded debt (K_d) were developed by summing the RBHCs' quarterly interest expenses, and dividing this figure by the average amount of total debt that they had outstanding over the year. This latter figure was computed by summing the average quarterly amount of long term debt outstanding with the average quarterly amount of short term debt outstanding.[16]

Table D.2 displays the cost of embedded debt for each of the RBHCs for 1991, 1992 and 1993.

4. Weighted Average Cost Of Capital

To compute the RBHCs' weighted average cost of capital (*WACC*), AT&T weighted the DCF-computed cost of equity (K_e) by the fraction of equity in the RBHCs' total capital structure, and weighted the RBHCs' cost of embedded debt (K_d) by its fraction in their total capital structure.[17] The equation demonstrating this process is shown below:

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[15] *1990 Represcription Order*, 5 FCC Rcd at 7514, para. 66.

[16] Data on RBHC interest expense and short and long term debt levels were collected from the *Telco Investor*, published by Business Planning, Inc., of Ardmore, PA. Data in these *Telco Investor* reports were extracted from annual reports and 10-K and 10-Q filings made by the RBHCs to the Securities and Exchange Commission. Because U S West has restated its interest expense to exclude interest from now discontinued operations, but has not restated its debt levels, AT&T contacted U S West Investor Relations to receive data describing the full level of U S West interest expenses.

[17] Data on fractions of debt and equity in RBHC capital structures were collected from the *Telco Investor*, published by Business Planning, Inc., of Ardmore, PA.

$$WACC = K_e \cdot \frac{E}{V} + K_d \cdot \frac{D}{V} \qquad (2)$$

where:

E = dollar value of equity,

D = dollar value of debt, and

V = total value of the firm's capital (= $E + D$).

The results of this analysis, reported in Table D.3, show that in 1991 the LECs' cost of capital was 10.42%, in 1992 it was 10.05%, and in 1993 it was 9.33%. Over the entire 1991-93 period, the LECs' cost of capital averaged 9.93%.

Table D.1

COST OF EQUITY

Company	1991	1992	1993	
Ameritech	12.13%	11.60%	10.83%	
Bell Atlantic	12.39%	12.82%	11.80%	
BellSouth	12.70%	11.72%	11.07%	
NYNEX	12.37%	12.02%	11.53%	
Pacific Telesis	13.28%	12.34%	10.99%	
Southwestern Bell	12.33%	12.72%	10.90%	**Overall:**
U S West	11.80%	11.92%	10.93%	**1991-93**
Average	12.43%	12.16%	11.15%	11.91%

Table D.2

COST OF DEBT

Company	1991	1992	1993	
Ameritech	8.29%	7.55%	7.01%	
Bell Atlantic	7.47%	6.82%	6.28%	
BellSouth	8.66%	8.20%	7.40%	
NYNEX	8.53%	8.24%	7.33%	
Pacific Telesis	9.05%	7.87%	8.36%	
Southwestern Bell	8.00%	7.30%	6.94%	**Overall:**
U S West	7.91%	7.57%	8.60%	**1991-93**
Average	8.27%	7.65%	7.41%	7.78%

Table D.3

WEIGHTED AVERAGE COST OF CAPITAL

Company	1991	1992	1993	
Ameritech	10.34%	9.73%	8.96%	
Bell Atlantic	9.70%	9.46%	8.69%	
BellSouth	11.03%	10.25%	9.62%	
NYNEX	10.53%	10.21%	9.58%	
Pacific Telesis	11.31%	10.30%	9.83%	
Southwestern Bell	10.42%	10.27%	9.20%	**Overall:**
U S West	9.84%	9.92%	9.68%	**1991-93**
Average	10.42%	10.05%	9.33%	9.93%

Appendix E

CHANGES IN LEC CAPITAL COSTS UNDER PRICE CAPS

1. Background

The degree to which a firm benefits from an economy-wide reduction in the cost of capital depends on the share of capital expenses in that firm's total expenses, *e.g.*, its capital intensity. Hence, a firm for which capital expenses comprise 20% of its total expense receives twice the percentage benefit from a given reduction in its cost of capital as does a firm that faces the same cost of capital reduction, but whose capital expenses comprise only 10% of its total expense.

Because the GNP-PI index of economy-wide price inflation models the changes in costs experienced by an "average" firm in the U.S. economy, [18] it will only reflect accurately the effects that an economy-wide cost of capital decline will have on a firm of average capital intensity. For example, if capital comprises 10% of an average firm's total expense, and the cost of capital drops by 30%, that firm's total costs drop by 3%. But because GNP-PI models the cost effects experienced by an average firm which also has 10% of its total costs as capital costs, the change in GNP-PI reflects completely the change in total expense experienced by this average firm. But GNP-PI will not fully reflect the decline in total costs experienced by firms of more than 10% capital intensity. If a firm has 20% capital intensity, the 30% drop in the cost of capital translates into a 6% reduction in that firm's total costs. But GNP-PI has reflected only half, or 3%, of the total cost reduction experienced by this firm.

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[18] See, *Second Report and Order* in CC Docket 87-313, released 10/4/90, paragraphs 50-54.

2. Estimation of Relative LEC Capital Intensity

Local exchange service is believed to be among the most capital intensive of U.S. industries. This section examines the evidence on the relative level of LEC capital intensity provided by two different methodologies. Note that for the purpose of determining the degree to which changes in LEC capital expenses are reflected by changes in GNP-PI, only the capital intensity of the LECs *relative* to the average firm in the U.S. economy need be established.

2.1 NIPA-based

The National Income and Product Accounts (NIPAs) provide one source of information about the capital intensity of telephone companies relative to U.S. industry as a whole.

Data from 1991 show that the Telephone and Telegraph (T&T) industry accounted for $127.7B of the $4519.6B in private nonresidential U.S. Gross Domestic Product (GDP).[19] Because GDP is the sum of the "value added" generated in each of the constituent industries of the U.S. economy, the value added generated by sectors of the T&T industry other than regulated local exchange service must be removed to arrive at an estimate of the LEC GDP. Interexchange and mobile telephone services (both net of access) are the only significant elements of the T&T category other than local exchange services.[20] An upper bound for the portion of this T&T GDP generated by the LECs would be $90B, an amount roughly equal to total regulated LEC revenues.[21] Thus, the LEC industry comprises no more than 1.99% (= $90B / $4519.6B) of nonresidential U.S. GDP.

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[19] U.S. Department of Commerce, "Gross Product by Industry, 1988-91," *Survey of Current Business* (November 1993), pp. 33-44.

[20] Telegraph service has now faded into insignificance.

[21] Because valued added is computed as gross revenues net of the cost of purchased inputs, gross revenues are an upper-bound estimate for an industry's value added.

To compute the capital intensity of the LEC industry, we must divide the share of U.S. GDP generated by the LECs into the share of total U.S. capital owned by the LECs. In 1991, the T&T industry had $282.1B in current cost net fixed capital – out of a total U.S. net stock of current-cost nonresidential fixed private capital of $5440.2B.[22] Because regulatory accounting records the value of T&T capital stocks on a historical cost rather than a current cost basis, regulatory figures for net capital stocks need to be adjusted before the equivalent current cost figures for LEC net capital stocks can be derived. ARMIS reports grossed up to reflect the entire LEC and interexchange industries identify, roughly, $200 B in regulated net capital – with the LECs amounting for $165B of this figure. Assuming that mobile telephone services have about $10B in capital suggests that the gross-up factor necessary to conform historical cost capital to current cost capital is about 1.34 (= $282.1B / $210B). Thus, on a current cost basis, LEC net capital stocks are about $221.1B (= 1.34 × $165B), or 4.06% (= $221.1B / $5440.2B) of U.S. net private nonresidential fixed capital.

Because LECs comprise 4.06% of U.S. capital, but only 1.99% of U.S. GDP, they are 2.04 (= 4.06% / 1.99%) times as capital intensive as the average firm in the U.S. private nonresidential economy.[23]

2.2 Firm-based

While the NIPAs allow calculation of capital use relative to value added, examining firm-specific information allows alternative calculations of capital use relative to gross output – and avoids complexities associated with disaggregating LEC data from total T&T data.

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[22] U.S. Department of Commerce, "Fixed Reproducible Tangible Wealth in the United States," *Survey of Current Business* (September 1993), pp. 61-69.

[23] An alternative, but equivalent, way to perform this analysis is to calculate the LEC capital/value added ratio as 2.46 (= $221.1B / $90B), and to compare this with the overall U.S. capital/GDP ratio of 1.20 (= $5440.2B / $4519.6B). As can be seen, the LEC ratio is 2.04 times the overall U.S. ratio.

Data describing both revenues and total investor-supplied capital were extracted from Standard & Poor's (S&P's) *Compustat* database of the S&P 500 for fiscal year 1992. The simple average capital/revenue ratio exhibited by the seven RBOCs plus GTE is 1.46. If the additional LECs contained in the S&P 500 are added to this calculation, the weighted average LEC capital/revenue ratio becomes 1.45.[24] These LEC capital/revenue ratios are in contrast to the revenue-weighted average capital/revenue ratio of 0.73 exhibited by all nonfinancial firms in the S&P 500.[25] Thus, S&P firm-level data indicate that LECs are 1.99 (= 1.46 / 0.73) times more capital intensive than the average firm in the U.S. economy.

3. Relative LEC Benefits From Cost of Capital Declines

Because the LECs are, roughly, twice as capital intensive as an average firm in the U.S. economy, the amount by which they benefit from an economy-wide decline in the cost of capital is twice what is reflected in reduced GNP-PI growth. Thus, while the LECs have enjoyed a 132 basis point reduction in their costs of capital, only 66 basis points worth of this reduction has been captured in GNP-PI.

Table E.1 demonstrates the calculations necessary to convert the LECs' 66 basis points of cost of capital reduction unreflected in GNP-PI into a dollar amount by which price capped LEC total costs have been reduced. In 1993, this amount of cost reduction unreflected by GNP-PI amounts to $322M.

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[24] These additional LECs include: TDS, Century, C-Tec, Pacific Telecom, Lincoln, Rochester, SNET, Alltel and Cincinnati. While an unweighted average is reasonable when the dataset contains just the RBOCs and GTE – which are all of similar size, weighting by relative revenues is necessary when firms of disparate size are included.

[25] Financial firms must be excluded from these calculations because their "capital" is lent out to others, and thus would double-count the investor-supplied capital (which includes debt) of the nonfinancial firms in the S&P 500.

Table E.1

VALUE OF A DECLINE IN COST OF CAPITAL

(Dollars in Thousands)

	All Price Cap LECs
Average Net Investment*	$31,246,027
Change in Cost of Capital	-1.32%
Portion Unreflected in GNP-PI	-0.66%
Change in Return	($206,224)
Income Tax Rate	36.00%
Tax Gross-up Factor	1.5625
Change in Total Costs After Adjusting for Taxes	($322,225)

* Source: Forms 492 filed 4/1/94